

Engineering And Robotics Learned Young

◆ EARLY ◆

Robotics Competition

Fall 2004 Mission

Roboticists, the citizens of Caseyville need your help. A world shortage of blood & medical supplies prompted the Caseyville residents to donate record amounts of blood and medical supplies. Caseyville needs you to build a robot to transport the blood and medical supplies from each district to the Caseyville Medical Center where they will be distributed around the world. Please help Caseyville and those around the World!

Below is everything that we know about the mission.

- The team must be ready to execute the mission for your EARLY Tournament.
- The equipment available for a team to build a robot or robots is 3 LEGO Motorized Simple Machines Kits.
- The following diagram presents the environment that will be encountered.

Field
48" x 48" x 3/8"
plywood

Robot Base
15" x 15"

Foothills
12" x 12"
3/4" of plywood

Mountains
9" x 9"
3/4" of plywood
(on top of Foothills)

Valley
15" x 18"
with notch



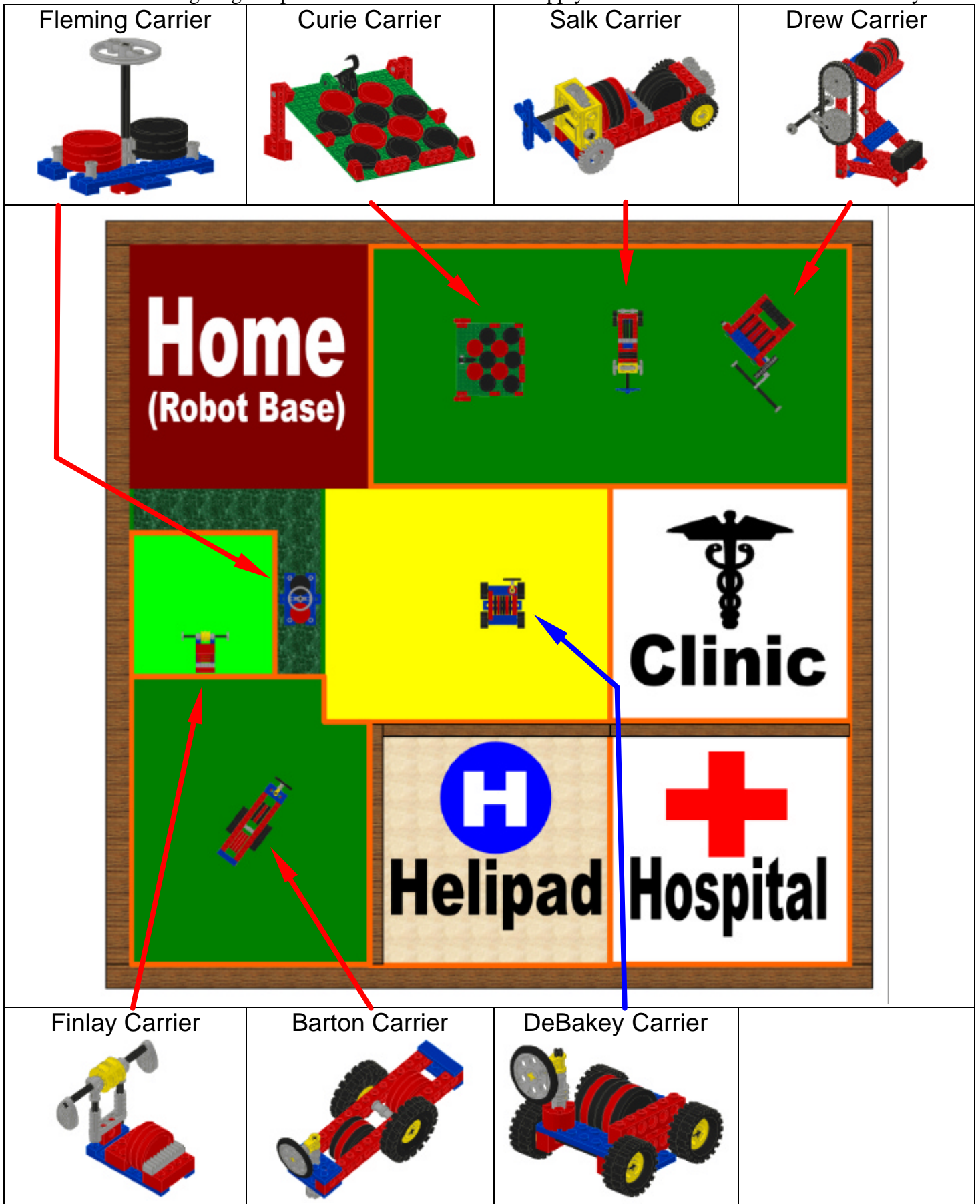
Field Perimeter
2" x 4" boards

Plains
30" x 15"

Fence
3/4" x 1/4"
molding between
Valley & Helipad,
Helipad &
Caseyville,
and
Hospital & Clinic

**Clinic, Hospital,
& Helipad**
15" x 15" each

- The following diagram presents where the Blood & Supply Containers & Carriers will be in Caseyville.



Mission Rules

1. The team has 2 minutes to complete the mission.
2. There will be 48 Containers on the playing field at the beginning of each mission, represented by red and black checkers. The red checkers are Blood Bags; the black checkers are Medical Supplies.
3. The team's score is determined at the end of the 2-minute mission.
4. If a Container is moving when time expires, the judge will wait until the Container has stopped moving before determining its scoring position.
5. The team scores **1** point for each *Medical Supply Container* in the CLINIC.
The team scores **2** points for each *Blood Bag Container* in the CLINIC.
6. The team scores **3** points for each *Medical Supply Container* in the HOSPITAL.
The team scores **4** points for each *Blood Bag Container* in the HOSPITAL.
7. The team scores **5** points for each *Medical Supply Container* on the HELIPAD.
The team scores **6** points for each *Blood Bag Container* on the HELIPAD.
8. A Container counts as on the HELIPAD if it is entirely on the raised area of the HELIPAD. The HELIPAD FENCE (molding) is part of the HELIPAD.
9. A Container counts as in the HOSPITAL if it entirely inside the HOSPITAL boundary. The HOSPITAL FENCE (molding) is part of the HOSPITAL.
10. A Container counts as in the CLINIC if it entirely inside the CLINIC boundary.
11. A Container counts as in the CLINIC if any part of the Container is breaking the plane of the zone between the CLINIC and the HOSPITAL.
12. A Container counts as in the HOSPITAL if any part of the Container is breaking the plane of the zone between the HOSPITAL and the HELIPAD.
13. Only the parts that are contained in three Motorized Simple Machine kits may be used to construct the robot (i.e. no other materials such as glue may be used on the robot). The kit parts may not be altered.
14. The team's robot/robots and all parts must start inside of the ROBOT BASE at the beginning of the 2-minute mission(i.e. no part of the robot may be off the playing field when the mission starts). However, the parts do NOT have to be assembled together. Parts can be removed and returned to the field during the 2-minute mission.
15. The ROBOT BASE is the 15" x 15" boundary extended vertically (i.e. the robot can not hang over the line at the beginning of the mission).
16. The line indicating the ROBOT BASE is part of the ROBOT BASE.
17. The team can touch their robot without penalty when the robot is partially inside the ROBOT BASE but after touching, the robot must be completely inside the ROBOT BASE to continue the mission.

18. The team's robot/robots must start inside of the ROBOT BASE every time it is returned to the ROBOT BASE during the mission (i.e. no part of the robot can be breaking the plane of the ROBOT BASE line after being touched by a team member).
19. A penalty of 10 points will be assessed if a team touches their robot, including parts that have become separated from the robot, which is outside of the ROBOT BASE.
20. If a robot is touched, the robot must be returned to the ROBOT BASE to continue the mission.
21. The controllers and wires are NOT considered part of the robot.
22. The robot shall not have any elastic stored energy (i.e. stretched rubber band) when the mission begins or when the robot is returned to base but elastic stored energy can be generated from activating a motor.
23. The controller and wire can ONLY be used to provide electrical power to robot motors (i.e. it can not be used to drag the robot, corral Containers or Carriers, etc.).
24. If a controller or wire are used illegally (judge's call), the team will be required to immediately place the robot back in the ROBOT BASE to continue the mission.
25. A team may touch any Container or Carrier COMPLETELY inside the ROBOT BASE without penalty.
26. If a Carrier is illegally touched, the playing piece along with any Containers it is holding will be removed from play for the remainder of the mission.
27. A Carrier is NEVER considered part of the robot.
28. Blood Bags and Medical Supplies are very valuable. A penalty of 10 points will be assessed for each Container that leaves the playing field.
29. All judges' rulings are final and may not be appealed.

Please contact Lucien.Junkin@jsc.nasa.gov or Chris.Culbert@nasa.gov with any questions or comments.

Thank you for maintaining the spirit of the game!